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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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SIEMENS CORPORATION
INTELLECTUAL PROPERTY DEPT.
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EXAMINER
JOLLEY, KIRSTEN

ART UNIT PAPER NUMBER

1762

DATE MAILED: 12/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/085,527

Applicant(s)

DOPPER, GEBHARD

Examiner

Kirsten C Jolley

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2/28/02.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

1. The first paragraph of page one of the specification states "This application is the US national stage of International Application No. PCT/EP00/08049, filed August 17, 2000...", however the application transmittal form did not refer to examination under 35 USC 371 as a national phase entry. Where there are conflicting instructions regarding national phase entry versus new application submission under 35 USC 111(a), 37 CFR 1.495(g) says that the documents and fees must clearly be identified as a submission to enter the national phase, otherwise the submission will be considered as being made under 35 USC 111(a). Therefore, the instant application was processed as a 35 USC 111(a) application. If Applicant desires that the instant application is processed as a national phase entry under 35 USC 371, Applicant can make his priority benefit claim to the PCT application using the procedure set forth in 37 CFR 1.78.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (US 5,520,516) in view of McComas et al. (US Re. 35,611).

As to claims 1 and 11-12, Taylor et al. discloses a method of applying a zirconium-based oxide ceramic coating to a turbine blade tip of a gas turbine engine. Taylor et al. teaches that prior to coating, the blade tip should be roughened just prior to coating for the best bond strength (col. 3, lines 60-67). Taylor et al. teaches that the method for roughening can be abrasive grit blasting. It is noted that the tip of a turbine blade has a curved surface.

Taylor et al. lacks a teaching that at least one of blasting distance, blasting intensity, blasting angle, and blasting time of the abrasive particle jet is matched to the contour line of the turbine blade in such a way that a homogeneous surface roughness is established along the contour line. It is the Examiner's position that one having ordinary skill in the art would have recognized that each of the blasting distance, intensity, angle, and time would directly affect the amount and degree of roughness formed on the substrate surface. For example, if a first region of the substrate is blasted for a longer period of time or with higher intensity or at a closer distance between the blasting apparatus and surface than a second region, then one skilled in the art would expect that the first region would result in a rougher surface than that blasted for a shorter period of time or with less intensity or from a farther distance. Further, it is the Examiner's position that one having ordinary skill in the art would have recognized that it is desirable to have a constant amount of roughening over the entire substrate surface in order to produce a coated surface where the coating is evenly adhered to the entire substrate surface. Therefore, it would have been obvious to one skilled in the art to have maintained at least one of the blasting distance, intensity, angle, or time constant along the contour of the substrate surface in order to form an even and consistently roughened surface, in order to ensure that the coating is uniformly adhered to the entire substrate surface.

Additionally, McComas et al. is cited as further evidence that consistent and uniform blasting is known and desirable when abrading turbine jet engine components such as turbine blades. McComas et al. teaches that critical parameters of its abrading process include nozzle distance from the surface and the liquid pressure (blasting intensity) (col. 3, lines 1-8). While McComas et al. discloses the use of blasting with water on a coated surface instead of abrasive grit blasting on an uncoated surface, both processes blast material at a surface using a jet for the purpose of abrading the surface beneath and therefore similar principles regarding blasting distance and blasting intensity would apply to both grit blasting and water jet blasting. It would have been obvious for one having ordinary skill in the art performing abrasive grit blasting in the process of Taylor et al., upon seeing the reference of McComas et al., to have maintained a constant nozzle distance and constant blasting intensity in order to uniformly roughen the surface. In the case of a substrate having a curved surface such as the tip of a turbine blade, such a step would necessarily comprise maintaining the blasting distance and intensity along the contour line of the substrate surface.

As to claim 2, it is well settled that it is not inventive to broadly provide a mechanical or automotive means to replace manual activity which has accomplished the same results. *In re Venner et al.*, 120 USPQ 192. The mere statement that a device to be operated automatically instead of by hand without a claim specifying any particular automotive mechanism is not a statement of the invention. *In re Rundell*, 9 USPQ 220.

As to claims 3-4, it would have been obvious to have moved the substrate surface and blasting nozzle/particle source relative to one another in order to roughen the entire desired

surface area. Additionally, McComas et al. teaches moving the nozzle and substrate surface relative to one another in col. 4, lines 3-15.

As to claims 6-10, Taylor et al. teaches that a first coating material -- a bond coat having the formula NiCoCrAlY , may be applied directly onto the roughened surface, followed by the second coating material -- the zirconium oxide-based ceramic coating material of the invention (col. 6, lines 63-64, and col. 5, lines 28-53).

As to claims 5, 13-14, and 18-20, with respect to the blasting angle, McComas et al. teaches that the blasting angle is a matter of preference, but an angle between 30-90 degrees is preferred and 45 degrees is most preferred (col. 3, lines 9-22). McComas et al. teaches that the angle affects the fragment location post-blasting, and the direction helps to remove the fragments from the interaction zone thereby ensuring that they do not interfere with the blasting process. It would have been obvious to one having ordinary skill in the art to have maintained the blasting angle constant in order to consistently remove the blasted fragments from the interaction zone since changing the angle would cause the fragments to move in a different location and thus potentially interfere with the blasting/abrading process.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Raghavan et al. (US 5,942,045) is cited as a method for abrading a coated substrate such as on rotor blades or other jet engine components. Rickerby et al. (US 5,645,893) is also cited as being directed to a method of applying a first bond coat to a turbine engine component followed by a second ceramic coating, whereby the substrate is grit blasted prior to coating.

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C Jolley whose telephone number is 703-306-5461 before December 10, 2003, and will be 571-272-1421 after December 10, 2003. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on 703-308-2333 before December 10, 2003, and 571-272-1415 after December 10, 2003. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.


Kirsten C Jolley
Patent Examiner
Art Unit 1762

kcj